ENGINEERING INVENTIONS.

A safety valve has been patented by Messrs. John W. Spolders and Francis X. Vien, of Brooklyn, N. Y. It is designed to act on the slightest excessive steam pressure, all the contacting points offering very little resistance, while the construction is simple and not liable to get out of order.

A railroad water tank has been patented by Messrs. John Skinner and Rolly W. Jackson, of Newman, Ill. This invention covers improvements to prevent the valve and its connections and the outlet pipe from becoming inoperative from the freezing of the water in the tank, and to do this effectually and cheaply.

A car coupling has been patented by Messrs. Henry L. and Charles W. Banta, of Canon City, Col. This invention covers a peculiar construction and arrangement of the coupling pin adjusting mechanism and of the link adjusting contrivance, the coupling being operated without the train man going between the cars to couple or uncouple them.

An exhaust nozzle extension for locomotives has been patented by Mr. Julius T. Lee, of Mattoon, Ill. Pipes of varying lengths are movably and adjustably supported within the smoke stack, above the stand pipe, whereby the exhaust steam may be discharged at different points in the stack, as desired, to increase or diminish the draught, the use of either discharge pipe being under the ready control of the engineer.

A balanced valve for steam engines has also been patented by the same inventor. The invention consists of an adjustable table or track held in the steam chest, and a roller frame with rollers traveling on the table and supporting the slide valve, being designed to save friction and wear of the valve, while keeping it true and even.

AGRICULTURAL INVENTIONS.

A center draught mowing machine has been patented by Mr. Warren Hill, of Towanda, Pa. This invention covers a novel construction and combination of parts in a machine designed to cut a very broad swath, and in which all the parts are easily adjustable, without rattling, and the minimum amount of friction.

A seeding machine has been patented by Mr. William H. Schenck, of Sterling, Col. This invention provides a drill designed to close without the aid of a drill or furrow closer after the passage of the drill-opening devices, making a narrow furrow and avoiding the necessity of employing a dragging furrow-closer.

MISCELLANEOUS INVENTIONS.

A chinch trap has been patented by Mr. Robert H. Wilson, of Timber Lake, Col. This invention provides a trap of novel construction designed to catch any kind of insects which secrete themselves in crevices and places from which it is difficult to dislodge them.

A bobbin winder for sewing machines has been patented by Annie Lewis, of Galveston, Texas. This invention covers a novel construction, combination, and arrangement of parts, constituting a new and improved attachment for sewing machines for winding bobbins.

A mandrel for bending lead pipes has been patented by Mr. John J. Carr, of Brooklyn, N. Y. It is made with a shank having a quarter bend and slightly tapering, with a shoulder formed on the shank for driving the latter wholly or partly into the pipe to be bent.

A combined burglar alarm and sash lock has been patented by Mr. Archie B. Caudle, of Monroe, N. C. This invention provides a device serving as a lock for the sash, and which operates an alarm, while the sash may be partly raised for ventilation, with no danger of its getting out of order, and the alarm may automatically reset itself.

A rubber compound or mixture has been patented by Mr. John A. Titzel, of Glenshaw, Pa. It is composed of gilsonite asphaltum, vulcanized rubber or scrap or waste, manganated linseed oil, spirits of turpentine, deodorized petroleum naphtha, and powdered sulphur, making a compound to be variously prepared and applied for different uses.

A twine oiler for self-binding reapers has been patented by Mr. Donald McCoig, of Mull, Ontario, Canada. It is a novel device, to be attached to the reaper in such a position that the twine may pass through it while passing from the twine box to the needle, to coat the twine with a substance to prevent insects and mice from eating it.

A whiffletree coupling has been patented by Mr. Ingalls Bragg, of South Andover, Me. This invention relates to an improvement in couplings in which the pivot bolt has a bearing above the whiffletree in a brace fixed to and rising from the cross bar or evener, the object being to make sure against accidental loosening and detachment of the bolt.

A bolt or bar having a coating of enamel or vitreous substance, combined with a protecting sleeve or jacket, has been patented by Mr. Oliver R. Butler, of Cooperstown, N. Y. Such vitreous covering of bolts is designed to absolutely resist the burglar's saw or file, making it impossible to sever a bolt or bar so made by any cutting instrument.

A skimmer has been patented by Mr. George W. Gulledge, of Briartown, Indian Ter. It consists of a pan secured to a bandle fulcrumed on a pivot secured to an extension rod, with a slotted fork held on the pivot and pressed against the end of the handle by a spring coiled on a rod extending from the fork, being specially adapted for skimming sorghum while undergoing the usual boiling process.

A rest for packing hats has been patented by Mr. James W. Seymour, of Brooklyn, N. Y. Combined with a packing box having a series of spaced brackets on opposite inner sides is a rest consisting of a ring of the general shape of the hat crown, and having loop ends longer than the width of the hat crown, to facilitate the packing and unpacking of hats in boxes.

A method of musical notation has been patented by Mr. Diego Fallon, of Bogota, U. S. of Colombia. It consists essentially of designating the sounds by consonants and their value and duration by vowels, the music to be written without the use of notes, clefs, keys, staffs, flats, or sharps, to enable a beginner to learn quickly, and to transpose music readily from one key to another.

A churn has been patented by Mr. Lambert Snyder, of Midland Park, N. J. The dash stem has adversely arranged slotted conical frames, with horizontal rods in alignment with the slots of the frames, whereby the fluid is drawn from the top and bottom toward the center of the dasher, in a way designed to make fine butter in a short time, with little labor.

A portable safe has been patented by Mr. Joseph J. Schuknecht, of Bailey, Ohio. It is for the storage of important papers, jewelry, etc., and has a hollow box with a lid, a box enlarged to form a step near its top held in the body a fire-proof filling isolating the box from the body, and other novel features, being cheaply manufactured and designed to afford secure protection against fire.

A combined cane and stool has been patented by Mr. William Leisner, of Los Angeles, Cal. This invention covers a cane made with two separable sections, a tubular head section and a body section, with two series of essentially triangular hinged members, and other novel features, making a cane which can be conveniently converted into a stool, while the article can be simply and cheaply manufactured.

A screw driver has been patented by Mr. Michael Cashin, of New York City. It has a longitudinally slotted handle with reversible pawls, the bit having right and left threads, a ratchet having pins engaging grooves in the bit, the pawls being adapted to be thrown into and out of engagement with the ratchet by turning the cap, the device being designed to be used as a simple screw driver or a ratchet screw driver.

Business and Personal.

The charge for Insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.

NEW BOOKS AND PUBLICATIONS.

THE METALLIC ALLOYS. A practical guide for the manufacture of all kinds of alloys, amalgams, and solders used by metal workers, together with their chemical and physical properties and their application in the arts and the industries, with an appendix on the coloring of alloys. Translated and edited, chiefly from the German of A. Krupp and Andreas Wildberger, with extensive additions, by William T. Brannt, one of the editors of "The Techno-Chemical Receipt Book," etc. Illustrated by sixteen engravings. 12mo. Pp. 428. Price $2.50. Philadelphia: Henry Carey Baird & Co., 810 Walnut Street.

The title as given above very well indicates the range of this admirable volume, which surpasses in completeness any book on alloys, amalgams, and the coloring of metals previously published in the English language. The treatise is arranged under forty-six chapters or sections and an appendix, each discussing with great amplitude a different subject, and it would be difficult for any worker in metals to fail to find precisely the alloy, amalgam, or solder which he needs, with a clear description of its properties and uses. A specially interesting feature of the book is the fullness with which phosphor bronze and aluminum alloys are treated. Like all of the publications of this house, so widely known by the industrial character of its books, this volume is provided with a full table of contents and an admirable index, these rendering any subject in it easy of access.

Notes & Queries

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters, or no attention will be paid thereto. This is for our information, and not for publication.

References to former articles or answers should give date of paper and page or number of question.

Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all, either by letter or in this department, each must take his turn.

Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.

Scientific American Supplements referred to may be had at the office. Price 10 cents each.

Books referred to promptly supplied on receipt of price.

Minerals sent for examination should be distinctly marked or labeled.

(1) C. W. D. asks: For the best way to get copper off the sides of a vat which has deposited there. The vat is lead lined. Also can you give me the process of coating electrotypes with steel? A. Connect your vat to the wire leading to the copper or carbon of your battery. Fill vat with sulphuric acid and water, and carry a wire from your zinc pole to a plate of copper immersed in the sulphuric acid. This will strip the copper.—For steeling process we refer you to SUPPLEMENT, No. 605, which we can send you for 10 cents.

(2) H. W. W. asks: 1. What is the process for reducing raw lump alum to burnt alum powder in large quantities? And what is loss in weight of alum by evaporation? A. Simply heat the alum in an open vessel to 401° Fah., such as an enameled frying pan. The following are the elaborate directions of the United States Pharmacopœia: Alum, in small pieces, one hundred and eighty-four parts. To make one hundred parts. Expose the alum for several days to a temperature of about 80° C. (176° Fah.) until it has thoroughly effloresced. Then place it in a porcelain capsule, and gradually heat it to a temperature of 200° C. (392° Fah.), being careful not to allow the heat to rise above 205° C. (401° Fah.) Continue heating at the before mentioned temperature until the mass becomes white and porous, and weighs one hundred parts. When cold, reduce it to a fine powder, and preserve it in well stopped vessels. 2. Please give receipt for a good blacking. A. For blacking we refer you to Phin's "Trade Secrets," which we can send you by mail for sixty cents.

(3) D. F. C. writes: A party recently passed through here selling a powder which, placed in a lamp containing oil, rendered it non-explosive; do you know of any compound of that description? A. We do not, and no such powder is known. The powder sold was valueless, and without effect of any kind.

(4) A. R. S. asks: 1. If hot and cold water are exposed to a temperature below freezing, will the hot water freeze first? Will it make any difference in this respect whether the water is in open vessels or in closed pipes? A. The cold water will freeze first, whether in open vessels or in pipes. 2. If water that has been heated and is become cold again and water that has not been heated are exposed to heat, will they both begin to boil at the same time? A. The unheated water will be apt to boil the first, owing to the presence of a certain amount of dissolved gases.

(5) R. G. D. asks: 1. If a solid glass ball be dropped into the ocean (at its greatest depth), will it sink to the bottom? A. It will. 2. Why should a diver be weighted according to the depth he desires to descend? A. This is a practical question. A weight that would cause a man to sink in one depth would insure his sinking to any depth. The diver finds by experience what weighting is best adapted to his needs.

(6) A. F. B. asks: 1. How near may one go to a dynamo for the electric light without danger of having one's watch balance wheel magnetized? A. It depends on the dynamo, its size, make, etc., and also on the size, quality of steel, etc., used in the watch movement. 2. What are the symptoms of such magnetizing? A. Your watch will fail to keep time, and the works will attract a fine needle suspended by a thin thread. 3. Supposing the watch balance to be magnetized, how may this be entirely demagnetized? A. For demagnetization of watches we refer you to SUPPLEMENT, Nos. 206,207, and SCIENTIFIC AMERICAN, 14, vol. 55.

(7) G. B. asks whether or not bisulphide of carbon is too dangerous to handle as an ant and gopher destroyer; in fact, as general insect destroyer. If not too dangerous for a careful person to use, will you please state how best used for above purpose? A. Bisulphide of carbon as well as its vapor is highly inflammable. Inhalation of its vapor produces very serious effects, a species of intoxication following, with loss of memory, etc. A person might become its victim when applying it, however careful he might be. Inject into soil with a syringe or force pump. See SCIENTIFIC AMERICAN SUPPLEMENT, No. 471, which we can send you for ten cents, for illustrations of improved appliances for application of bisulphide of carbon to the soil.

(8) E. F. F. writes: In a discussion with a friend, I made use of the phrase that in the telephone sound was converted into electricity on one end, and then on the other end of the line reconverted into sound. The correctness of this expression was doubted, it being held